Service Hints

Plasma Television

<PDP 2011 Model>
TH-P50/46/42U30S
TH-P50/42X30S
TH-P50/46/42U30G
TH-P50/42X30G

TH-P50U30S

Troubleshooting Guide

- Ver 1.0-

This service hints is published for technicians and engineers for repair.
And it gives you the information how to judge the defective board of PDP.
In the future,we will improve the contents for more easy diagnostic and troubleshooting.

Please file and use this Service Hints together with the main service manual and other publications related to models.

⚠ WARNING

Panasonic®

Contents

1. 2011 PDP Line up & Feature Comparison (2D model)

1. 2011 PDP Line up & Feature Comparison

		U30 Series	X30 Series
Picture	Size	50/46/42	50/42
	Full HD 3D	—	—
	Moving Picture Resolution	900 lines	720 lines
	THX Mode	—	—
	Resolution Enhancer	Y	—
	ISFccc	—	—
	3D Colour Management	—	—
Sound	Speakers	Full-range x 2 (L, R)	Full-range x 2 (L, R)
Networking	HDMI Input	3 (1 side, 2 rear)	3 (1 side, 2 rear)
	Support Feature	Audio Return Channel (Input 2)	Audio Return Channel (Input 2)
	USB	2 (side)	2 (side)
	Skype Camera	—	—
	PC Input	Y	Y
	VIERA Connect (IPTV)	—	—
	Wireless LAN Adaptor	WiFi Ready	WiFi Ready
	DLNA	Y	Y
Others	Swivel Angle	—	—
	One-Sheet-of-Glass Design	—	—

2. PCB Location & Function
(2D model)
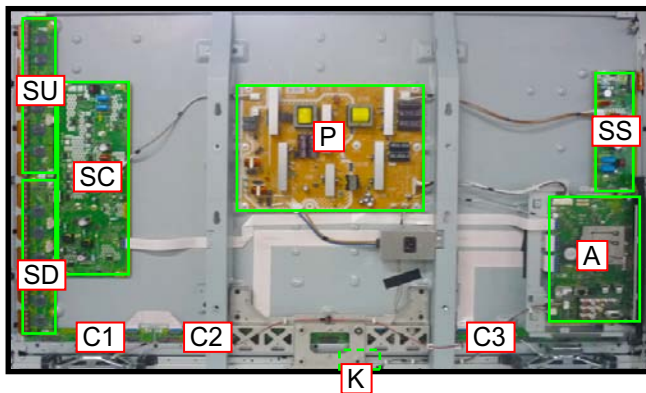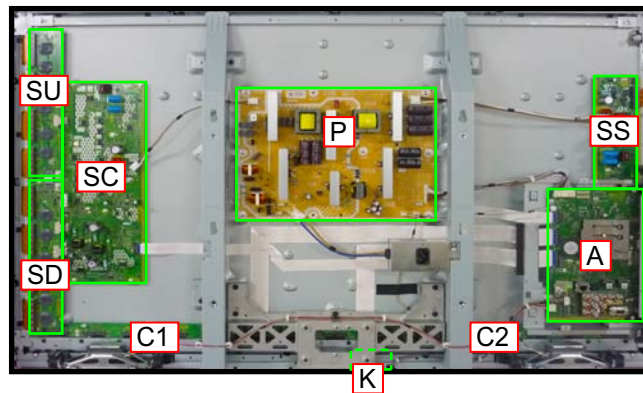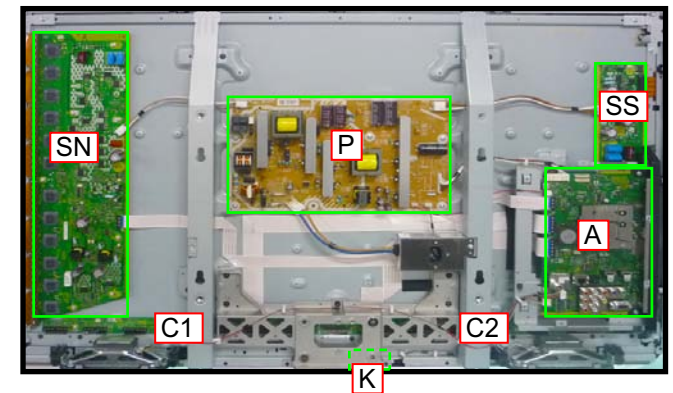
TH-P50U30S / G

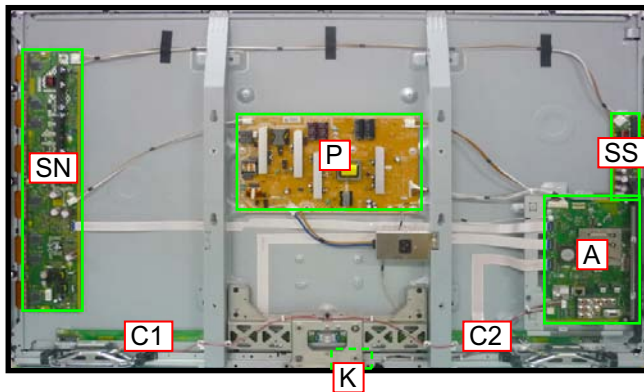| Board Name	Function	Parts Number
P	Power Supply Non serviceable. P-Board should be exchanged for service.	N0AE5JK00009
A	Main AV input, processing	TZTNP01MUUS (for TH-P50U30S), TZTNP01MKUG (for TH-P50U30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NNUA42
C1	Data Driver (Lower Right)	TNPA5318
C2	Data Driver (Lower Center)	TNPA5319
C3	Data Driver (Lower Left)	TNPA5320
SC	Scan Drive	TXNSC11JGK50
SS	Sustain Drive	TXNSS11JGK50
SU	Scan out (Upper) Non serviceable. SU-Board should be exchanged for service.	TXNSU11JGK50
SD	Scan out (Lower) Non serviceable. SD-Board should be exchanged for service.	TXNSD11JGK50
—	————	————

TH-P46U30S / G

Board Name	Function	Parts Number
P	Power Supply Non serviceable. P-Board should be exchanged for service.	N0AE5JK00009
A	Main AV input, processing	TZTNP01MVUS (for TH-P46U30S), TZTNP01MLUG (for TH-P46U30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NNUA42
C1	Data Driver (Lower Right)	TNPA5316
C2	Data Driver (Lower Left)	TNPA5317
—	————	————
SC	Scan Drive	TXNSC1MUUM46
SS	Sustain Drive	TXNSS1MUUM46
SU	Scan out (Upper) Non serviceable. SU-Board should be exchanged for service.	TXNSU1MUUM46
SD	Scan out (Lower) Non serviceable. SD-Board should be exchanged for service.	TXNSD1MUUM46
—	————	————

TH-P42U30S / G

Board Name	Function	Parts Number
P	Power Supply Non serviceable. P-Board should be exchanged for service.	N0AE5JK00008
A	Main AV input, processing	TZTNP01MWUS (for TH-P42U30S), TZTNP01MMUG (for TH-P42U30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NNUA42
C1	Data Driver (Lower Right)	TNPA5314
C2	Data Driver (Lower Left)	TXNC211FHK42
—	————	————
—	————	————
SS	Sustain Drive	TXNSS11FHK42
—	————	————
—	————	————
SN	Scan Drive	TXNSN11FHK42
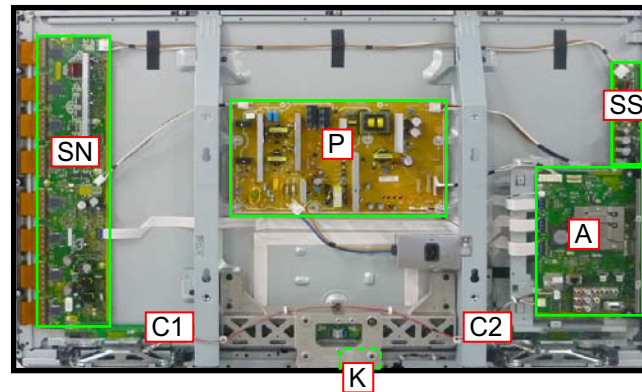
TH-P50X30S / G

Board Name	Function	Parts Number
P	Power Supply Non serviceable. P-Board should be exchanged for service.	N0AE5JK00007
A	Main AV input, processing	TZTNP01MXUS (for TH-P50X30S), TZTNP01MNUG (for TH-P50X30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NNUA42
C1	Data Driver (Lower Right)	TXNC111MGK50
C2	Data Driver (Lower Left)	TXNC211MGK50
SS	Sustain Drive	TXNSS11MGK50
SN	Scan Drive	TXNSN11MGK50

TH-P42X30S / G

Board Name	Function	Parts Number
P	Power Supply Non serviceable. P-Board should be exchanged for service.	N0AE5JK00006
A	Main AV input, processing	TZTNP01MYUS (for TH-P42X30S), TZTNP01MPUG (for TH-P42X30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NNUA42
C1	Data Driver (Lower Right)	TXNC111HHK42
C2	Data Driver (Lower Left)	TXNC211HHK42
SS	Sustain Drive	TXNSS11HHK42
SN	Scan Drive	TXNSN11HHK42

3. PCB List
(2D model)

3. PCB List

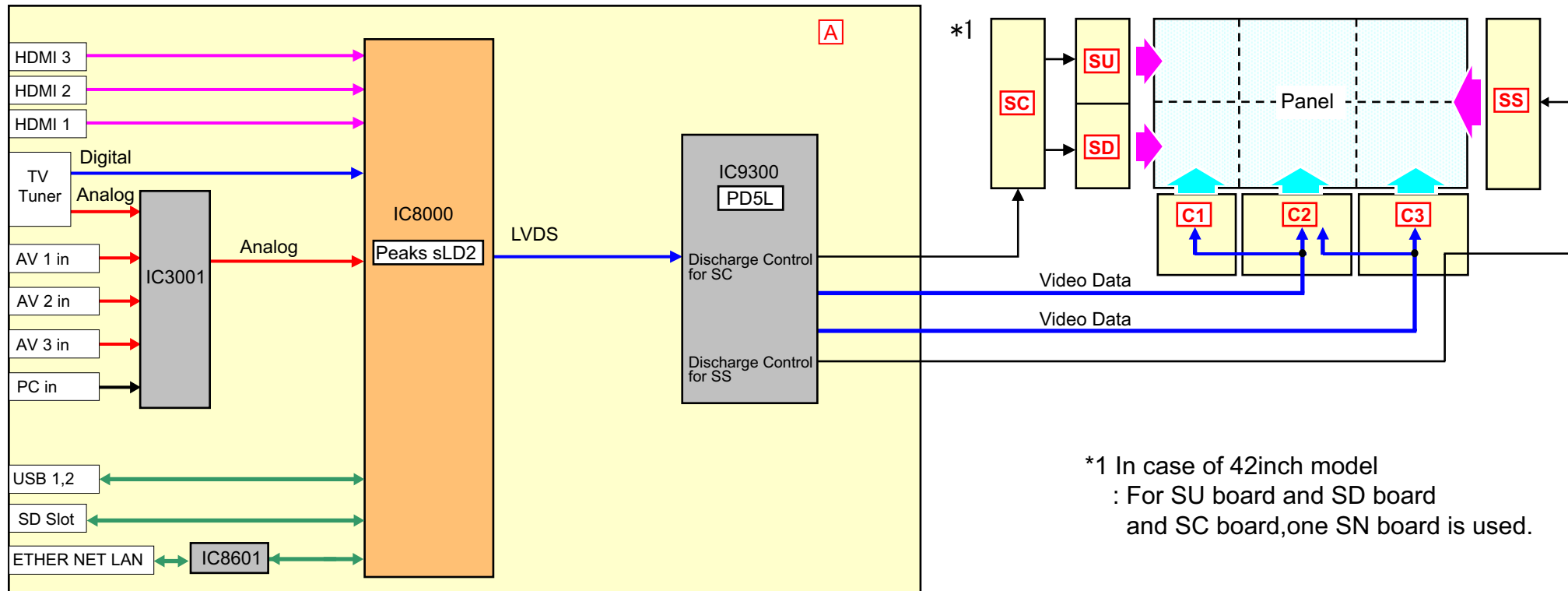| Board	U30 series						X30 series			
	TH-P50U30S	TH-P50U30G	TH-P46U30S	TH-P46U30G	TH-P42U30S	TH-P42U30G	TH-P50X30S	TH-P50X30G	TH-P42X30S	TH-P42X30G
P	N0AE5JK00009	N0AE5JK00009	N0AE5JK00009	N0AE5JK00009	N0AE5JK00008	N0AE5JK00008	N0AE5JK00007	N0AE5JK00007	N0AE5JK00006	N0AE5JK00006
A	TZTNP01MUUS	TZTNP01MKUG	TZTNP01MVUS	TZTNP01MLUG	TZTNP01MWUS	TZTNP01MMUG	TZTNP01MXUS	TZTNP01MNUG	TZTNP01MYUS	TZTNP01MPUG
K	TXN/K1NNUA42	TXN/K1NNUA42	TXN/K1NNUA42	TXN/K1NNUA42	TXN/K1NNUA42	TXN/K1NNUA42	TXN/K1NNUA42	TXN/K1NNUA42	TXN/K1NNUA42	TXN/K1NNUA42
C1	TNPA5318	TNPA5318	TNPA5316	TNPA5316	TNPA5314	TNPA5314	TXNC111MGK50	TXNC111MGK50	TXNC111HHK42	TXNC111HHK42
C2	TNPA5319	TNPA5319	TNPA5317	TNPA5317	TXNC211FHK42	TXNC211FHK42	TXNC211MGK50	TXNC211MGK50	TXNC211HHK42	TXNC211HHK42
C3	TNPA5320	TNPA5320	----	----	----	----	----	----	----	----
SC	TXNSC11JGK50	TXNSC11JGK50	TXNSC1MUUM46	TXNSC1MUUM46	----	----	----	----	----	----
SS	TXNSS11JGK50	TXNSS11JGK50	TXNSS1MUUM46	TXNSS1MUUM46	TXNSS11FHK42	TXNSS11FHK42	TXNSS11MGK50	TXNSS11MGK50	TXNSS11HHK42	TXNSS11HHK42
SU	TXNSU11JGK50	TXNSU11JGK50	TXNSU1MUUM46	TXNSU1MUUM46	----	----	----	----	----	----
SD	TXNSD11JGK50	TXNSD11JGK50	TXNSD1MUUM46	TXNSD1MUUM46	----	----	----	----	----	----
SN	----	----	----	----	TXNSN11FHK42	TXNSN11FHK42	TXNSN11MGK50	TXNSN11MGK50	TXNSN11HHK42	TXNSN11HHK42

4. Block Diagram
(2D Model)

4.Block Diagram

Signal Processing Circuit (1) U30 series

<PCB Function>

[e.g.TH-P50U30S]

A

HDMI 3
HDMI 2
HDMI 1

TV Tuner — Digital

IC8000
Peaks sLD2

LVDS

IC9300
PD5L

Discharge Control for SC

Discharge Control for SS

*1

SC

SU

SD

Panel

SS

C1   C2   C3

Video Data

Video Data

TV Tuner — Analog

AV 1 in
AV 2 in
AV 3 in
PC in

IC3001

Analog

USB 1,2
SD Slot
ETHER NET LAN   IC8601

*1 In case of 42inch model
   : For SU board and SD board
     and SC board,one SN board is used.

IC3001
  : Video Switch
   (Audio Switch)
IC8601
  : ETHER NET I/F

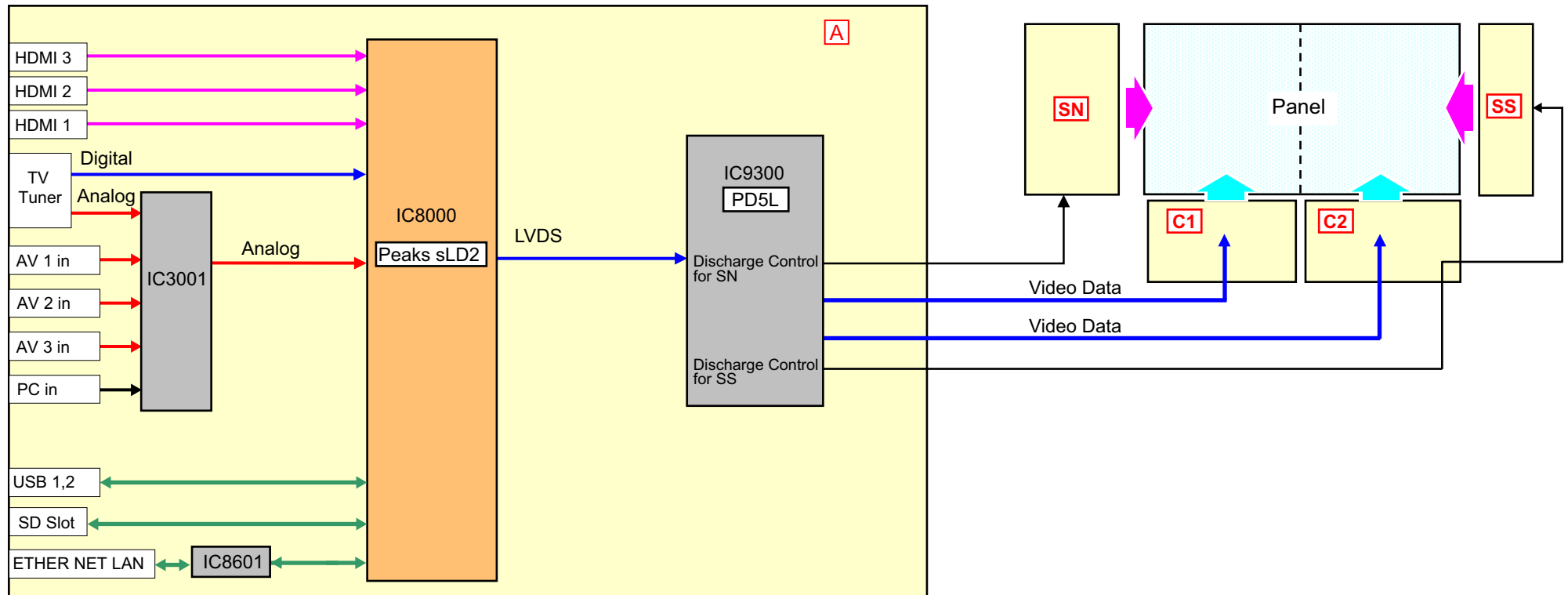**IC8000**
  : Peaks sLD2
   (Digital Video Processor)

IC9300
  : PD5L
  Sub Field Processor,
  Discherge Control
  Plasma AI

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<PCB Function>

IC3001
: **Video Switch**
  (Audio Switch)
IC8601
: **ETHER NET I/F**

IC8000
: **Peaks sLD2**
  (Digital Video Processor)

IC9300
: **PD5L**
  Sub Field Processor,
  Discherge Control
  Plasma AI

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5. Troubleshooting
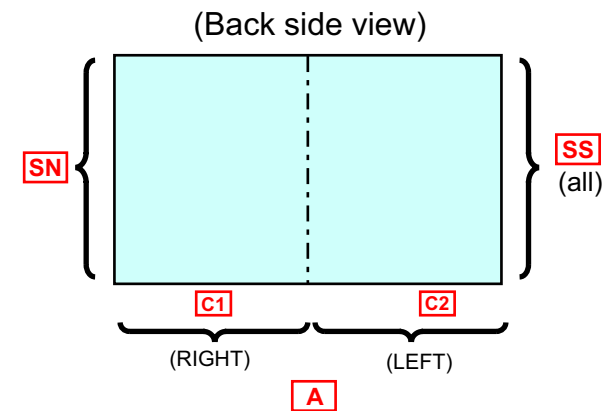# (2D model)

You know the possible defective board by picture trouble area.

[In case of U30 series]
(Full HD models)

<Display device block diagram>

<Relation of defective board and picture trouble area >

50 inch (Back side view)

46 inch (Back side view)

42 inch (Back side view)

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You know the possible defective board by picture trouble area.

[In case of X30 series]
(HD models)
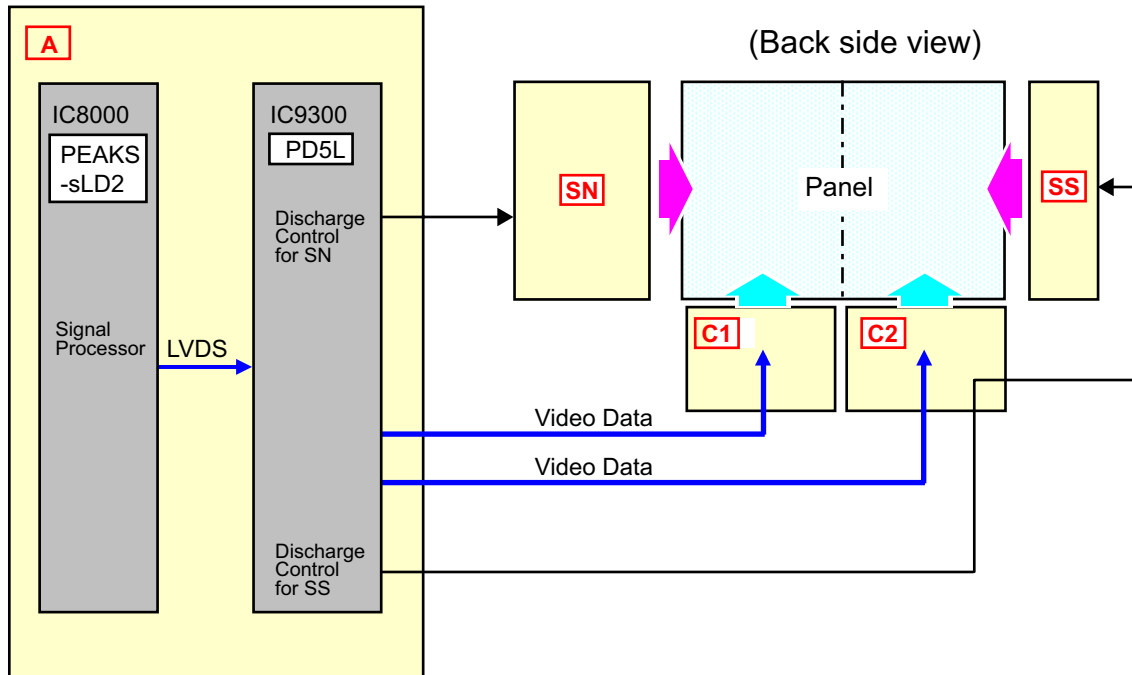
<Display device block diagram>

A

(Back side view)

IC8000
PEAKS -sLD2

Signal Processor

LVDS

IC9300
PD5L

Discharge Control for SN

Discharge Control for SS

SN

Panel

SS

C1

C2

Video Data

Video Data

<Relation of defective board and picture trouble area >

(Back side view)

SN

SS
(all)

C1

C2

(RIGHT)

(LEFT)

A

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[In case of U30 / X30 series]

PDP panel defective (Data driver IC defective)

Data driver IC or C or A board defective

Width is narrower than FPC

Width is same as FPC

Data driver IC defect= PDP panel defect

PDP panel

1 line defect   defect

Data driver IC

C board

Buffer IC

PDP panel

Full HD models : About 6.0 - 7.5cm
HD models : About 11.5 - 14.0cm

Data driver IC

or

C board

Buffer IC

or

A board

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[In case of U30 / X30 series]

TH-P50/46U30

SU board defective

SD board defective

TH-P42U30 / HD model

SN board defective

SC

SU

SCAN
DRIVE
IC

SD

PDP panel

Scan Drive :
Pulse timing is shifted each horizontal electrode.

1 line abnormal

Sustain Drive :
All the lines are same waveform.
All the lines are connected mutually.

SS

When FFC is damaged, it is needed to replace the panel because of FFC is bonded to the panel directly.

If horizontal line is showed, it is possible that defect of one pin of scan drive IC or failure of connection to the panel or damage of electrode on the panel.

SS board defect doesn't cause horizontal line problem because of electrodes on SS board are connected mutually.

In case of TH-P42U30 and HD models : For SU board and SD board and SC board,one SN board is used.

< Mirror function >

Mirror Function : Picture can be reversed left and right or up and down.

For vertical lines problems, this feature can help to determine if the problem is the A board or the panel.
If the position of the line/lines changes when performing this function, the A board is possibly defective.
The rear cover does not have to be removed to do this.

To enter the Mirror Function.

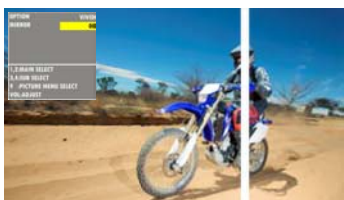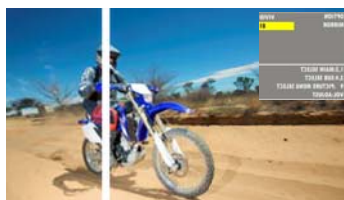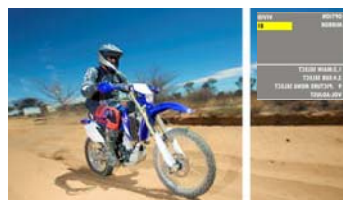From the Service Mode Menu,   Press 1 or 2 to select "OPTION".
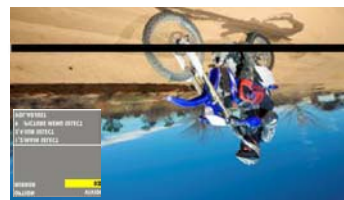   Press 3 or 4 to select "MIRROR".

Press the VOLUME up or down button to change the Mirror's data.
   Data = 00   Default data (Mirror function is off).
   Data = 01   Picture is reversed left and right.
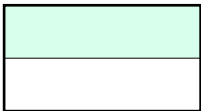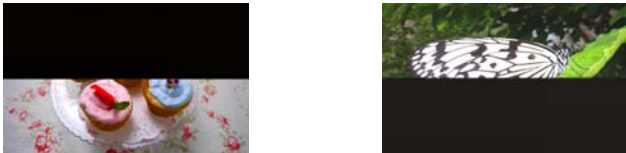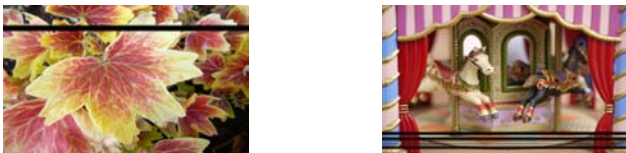   Data = 02   Picture is reversed up and down.

<How to diagnose by using "Mirror function">
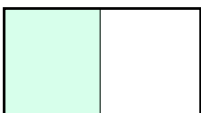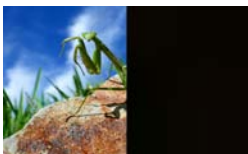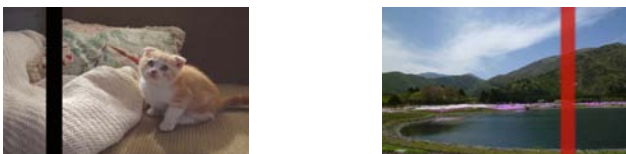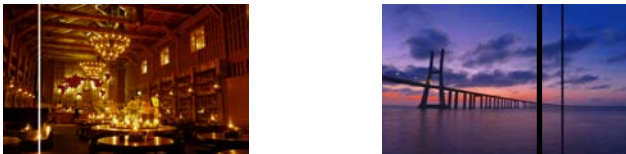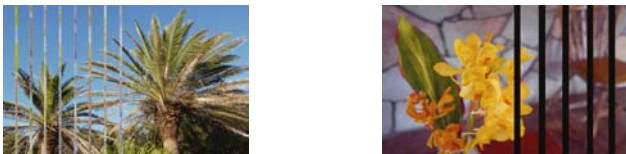
	Data : 00 ➡	Data : 01	
		the picture & line : reverse	only the picture : reverse
Vertical Line			
		Defective Block : A board	Defective Block : Panel or C board
	Data : 00 ➡	Data : 02	
		the picture & line : reverse	only the picture : reverse
Horizontal Line			
		Defective Block : A board	Defective Block : Panel or SD board *

* In case of 42inch models and HD models : For SU board and SD board and SC board,one SN board is used.

< Some part of screen : U30 / X30 series >

Symptom	Actual symptom		Defective board
Trouble at Upper or Lower half			Over 46inch : SU / SD 42inch and HD model : SN
Horizontal line (Upper or Lower side)			Over 46inch : SU / SD 42inch and HD model : SN or panel
Trouble at Left or Right half (TH-P50U30 : Left or Center or Right part)	P46/42 U30 and HD model	P50U30	TH-P46/42U30 and HD model : C1,C2 TH-P50U30 : C1-C3
Vertical line (Width is same as FPC)			C or A or PDP panel
Vertical line (Width is narrower than FPC)			PDP panel
Regular bar			A

\<Model\>
U30, X30 series

\<Symptom\>
Picture Noise, Full Vertical Line, Abnormal color

\<How to enter the Test Pattern\>

1. Press the "VOLUME -" on the TV set and
   push " i " button of remote controller
   3 times at the same time.

2. After this procedure, you can enter
   "Service Mode" and select "AGING",
   then "Test pattern" will appear.

3. Push "3" button of Remote Controller
   to select the test pattern mode to forward.

4. Push "4" button of Remote Controller
   to select the test pattern mode to reverse.

\<Test Pattern (Normal)\>

1:White → 2: Blue with White Frame → 3:Green → 4:Red → 5:Dark White → 6:Dark Blue → 7:Dark Green → 8:Dark Red

9:Ramp White, 10:Ramp Red, 11:Ramp Green, 12:Ramp Blue

24:White with count — Tuner Block (24)

Panel Block (1-23)

23:Half fixed White

22:R/G/B/W

21:ON/OFF Aging

20:Scroll ← 19:1% Window White Frame ← 18:Blue ← 17:White Frame ← 16: 9Points ← 15:Color bar ← 14:1% Window ← 13:A and B zone
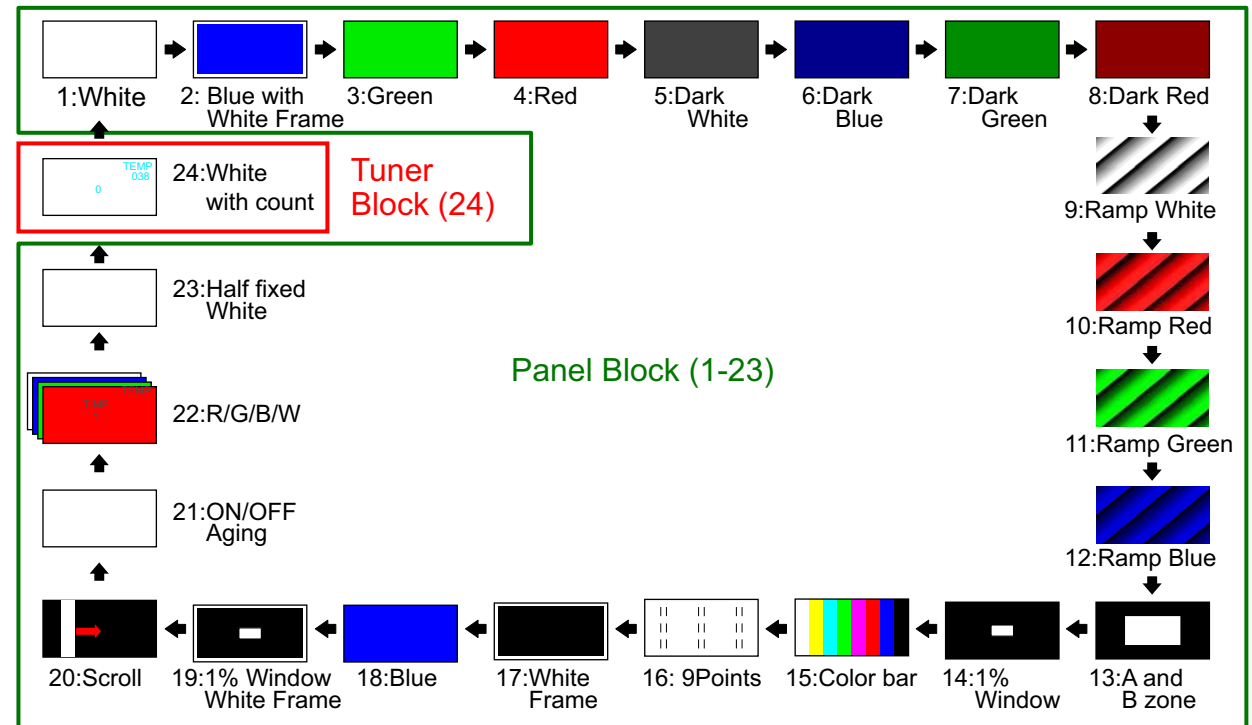
\<Diagnosis\>
How to diagnose by using test pattern

Abnormal picture
(Picture Noise, Full Vertical Line, Abnormal color)
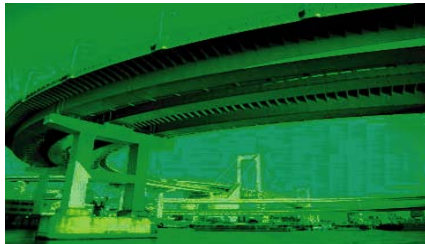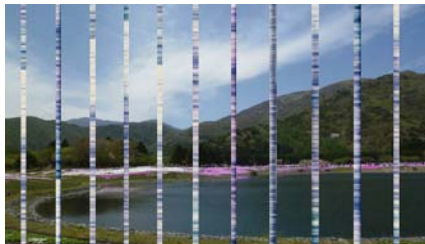
Test pattern (1-23)	Defective Block (Board)
Abnormal	Panel Block (A Board or Panel)
Normal	Tuner Block (A Board)

No picture

Test pattern	Defective Block (Board)
No picture	Panel Block (A Board or Panel)
O.K	Tuner Block (A Board)

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< All area of screen >

Symptom	Actual symptom	Defective board
Irregular Color		A board
All vertical line		A board
Abnormal electric discharge		in case of P50/46U30 SC / SS board in case of P42U30 and HD model SN / SS board

6. No Power Troubleshooting (When LED doesn't Blink)

[Model]

TH-P50/46/42U30S, TH-P50/42X30S
TH-P50/46/42U30G, TH-P50/42X30G

	Power LED error code	Contents	Check points
1	Power LED is Off (No picture/No sound)	P-board abnormal Vsus:voltage down P15V:voltage down F15V:voltage down	P-board SN/SC-board SS-board A-board
2	Power LED is green (No picture/No sound)	P15V:voltage down	P-board SN/SC-board SS-board A-board

Troubleshooting Flowcharts
: refer to 24 page, 25 page

[Model]
   TH-P50/46/42U30S, TH-P50/42X30S, TH-P50/46/42U30G, TH-P50/42X30G
 < 1. Power LED is Off : No Picture, No Sound >

After Power SW ON. Is the power green LED blinking before shutdown? → Not Blinking

Blinking ↓

Disconnect SN2 or SC2. Does SN2's 1pin or SC2's 1pin(Vsus) short to GND? → Short → SN/SC Board

No short ↓

Disconnect SS11. Does SS11's 1pin(Vsus) short to GND? → Short → SS Board

No short ↓

Disconnect SN2 or SC2 and SS11. Does P2's 1pin(Vsus) short to GND? → Short → P Board

No short ↓

A Board

Disconnect SS11. Does SS11's 4pin (P15V) short to GND? → Short → Both SS Board and P Board

No short ↓

Disconnect SN20 or SC20. Does TP82(P15V) short to GND? → Short → Both SN/SC Board and P Board

No short ↓

Disconnect A6/A20. Does A6's 13pin(P15V) short to GND? → Short → Both A Board and P Board

No short ↓

P Board

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< 2. Power LED is green : No Picture, No Sound >

```
┌─────────────────────┐
│ All input source    │ ──Yes──▶ [ A Board ]
│ picture is NG?      │
└─────────────────────┘
          │ No
          ▼
┌─────────────────────┐
│ Can OSD be          │ ──Displayed──▶ [ A Board ]
│ displayed?          │
└─────────────────────┘
          │ Not displayed
          ▼
┌─────────────────────┐
│ Status of green LED │ ──Light──▶ [ A Board ]
│ on SN/SC,SS board.  │
└─────────────────────┘
          │ Not light
          ▼

┌──────────────────────────┐
│ Disconnect SS11.         │ ──Short──▶ [ SS Board ]
│ Does SS11's 4pin (P15V)  │
│ short to GND?            │
└──────────────────────────┘
          │ No Short
          ▼
┌──────────────────────────┐
│ Disconnect SN20 or SC20. │ ──Short──▶ [ SN/SC Board ]
│ Does TP82(P15V)          │
│ short to GND?            │
└──────────────────────────┘
          │ No Short
          ▼
┌──────────────────────────┐
│ Disconnect A6/A20.       │ ──Short──▶ [ A Board ]
│ Does A6's 13pin(P15V)    │
│ short to GND?            │
└──────────────────────────┘
          │ No Short
          ▼
     [ P Board ]
```

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7. Case Example of Picture Trouble

[1] Model : 2011 model

[2] Symptom : Rainbow vertical bar
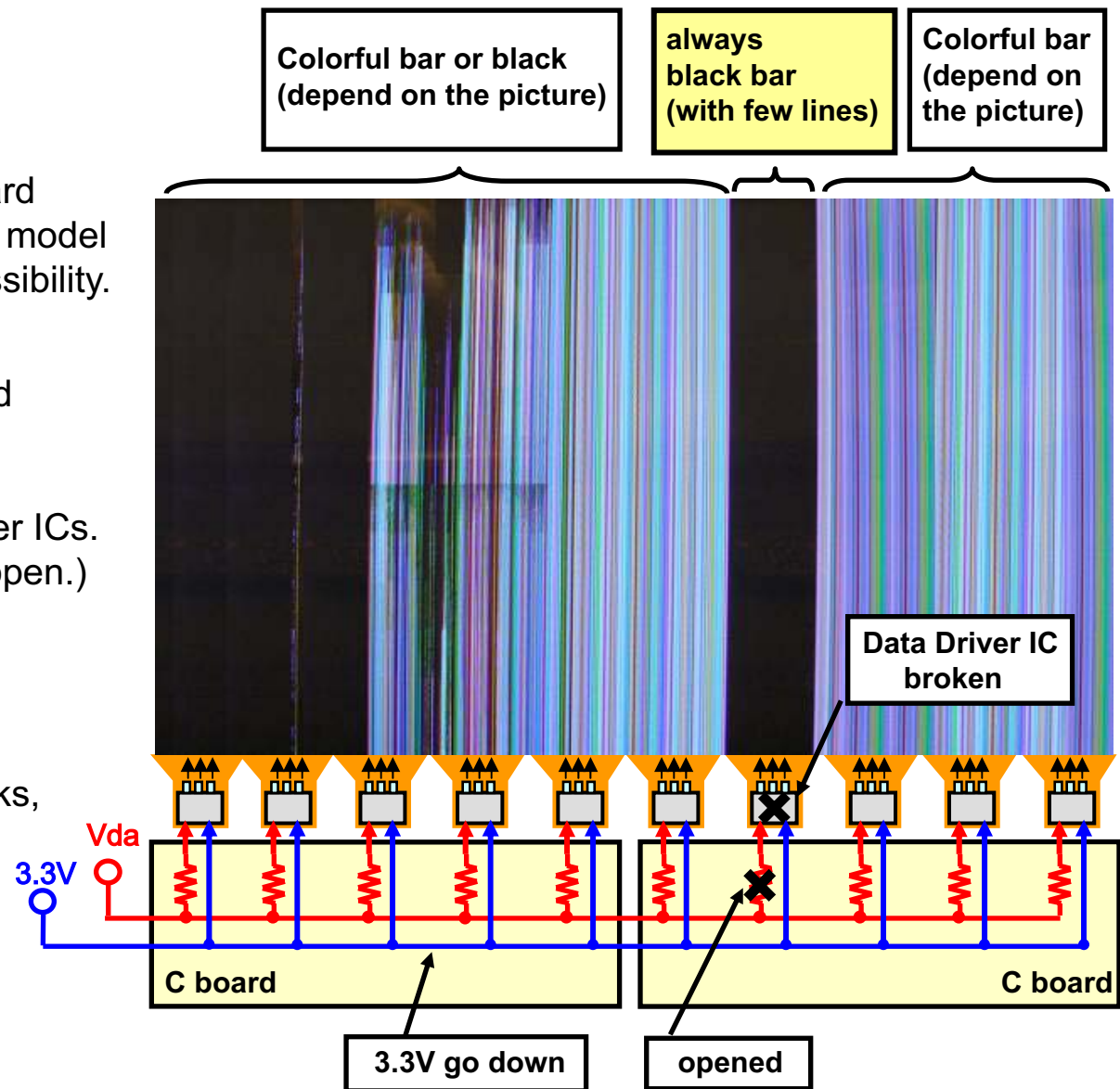
[3] Defective parts :

This symptom is very likely to be the A board defect for the previous model, but for 2011 model the Panel and C board defect is a high possibility.

[4] Summary :

If one of the Data Driver IC is defective and 3.3V go down, the other Data Driver ICs don't work correctly.
Because 3.3V is common for all Data Driver ICs.
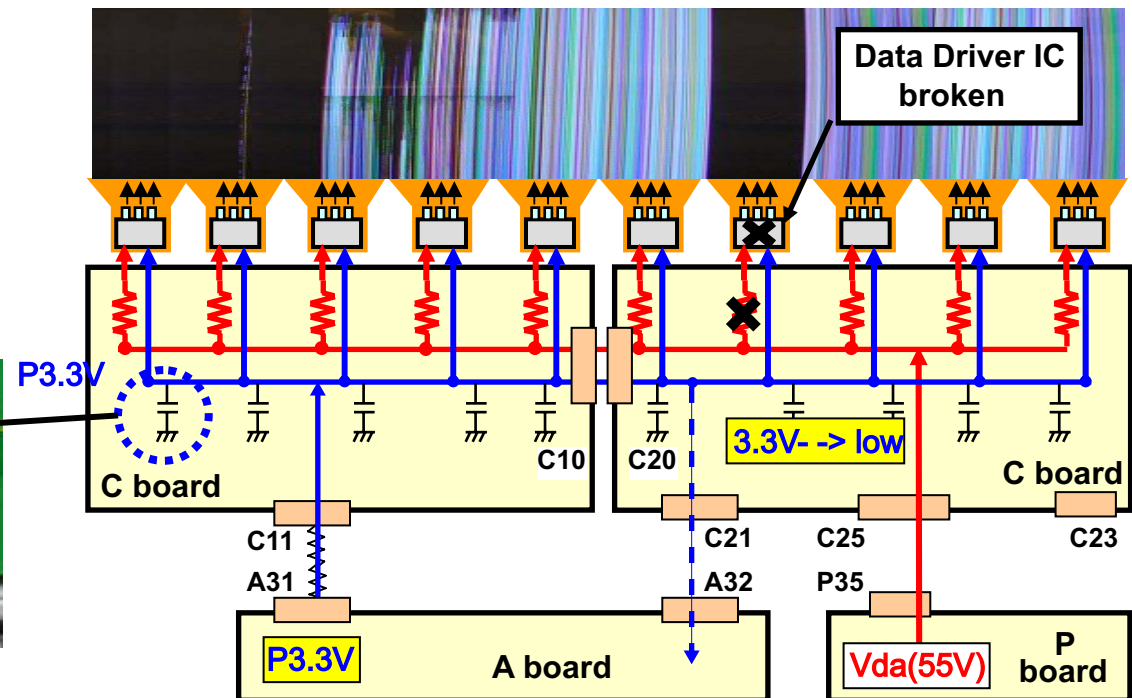(Vda line is isolated due to resister being open.)

[5] Check point (Trouble shoot) :

Check by displaying some images.
If the position (length) of colorful bars change and there are some black bar blocks, the data driver IC is defective.
If there is no black bar block, check the connection of cables between A and C board.
If trouble still persists, the A board could be defective.

Colorful bar or black (depend on the picture)

always black bar (with few lines)

Colorful bar (depend on the picture)

Data Driver IC broken

Vda

3.3V

C board

C board

3.3V go down

opened

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[6] Detail Troubleshoot : Short check of the P3.3V line

Unplug the TV

Check short circuit between P3.3V and GND. (at one of Capacitor on C1/2/3 board)

→ Not Shorted → Check connections between the A board and the C boards. (A31,A32,C11,C21) Make sure that all connectors are properly seated.

↓ Shorted

Remove connectors A31 and A32 from A board. And check short circuit again.

→ Not Shorted → Replace the A board

Not fixed yet ↓

↓ Shorted

Replace PDP Panel and C# board

There is a capacitor beside the each connector CB##.

P3.3V

CB13   R309 R303 R304 R312

Data Driver IC broken

P3.3V

C board

C10   C20   **3.3V- -> low**   C board

C11   C21   C25   C23
A31   A32   P35

P3.3V   A board   **Vda(55V)**   **P board**

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[7] Symptom example (another image)

Normal Image   Defective unit